

Application No. 09/955,722
SD-6436.1 S-97675

REMARKS

Objection to the Drawings

The Office objected to the Drawings as not including the following reference signs not mentioned in the description: element 40, 42, 44, and 46 from Fig. 2B.

In response, Applicants amended the Specification to include the following sentence:

-- A schematic MEMS device 40 is shown, having MEMS elements 24 comprising two polysilicon gears 42, 44 and a linkage bar 46. --

Support for this addition can be found at col. 8, lines 4-7 of US patent 6,335,224 (Serial No. 09/572,562), which was incorporated by reference in the instant application.

Status of Claims

- Claims 45-60 are currently pending.

Claim Rejections under 35 USC 103(a)

The Office rejected claims 45-48 and 52-57 under 35 USC 103(a) as being unpatentable over Kao, et al. (US 5,923,955) in view of Noordegraaf et al. IEEE. The Office also rejected claims 49-51 and 58-60 under 35 USC 103(a) as being unpatentable over Kao, et al. (US 5,923,955) in view of Noordegraaf et al. IEEE, and further in view of Murakami et al. (US 4,691,225).

Applicants submit that all of the pending claims 46-60 stand or fall as a single group, and the following arguments are directed to the entire set of claims.

Applicants submit that the Office has failed to make a *prima facie* case of obviousness because it did not satisfy two of the three basic required criteria; i.e., (1) the Office has failed to provide adequate suggestion or motivation from the prior art

**Application No. 09/955,722
SD-6436.1 S-97675**

to combine the reference teachings, and (2) the proposed combination renders the prior art unsatisfactory for its intended purpose.

Issue #1 – Failure to Provide Suggestion or Motivation to Combine References

The Office stated in the Action of 05/17/2004 that it would have been obvious to one of ordinary skill in the art at the time of invention to include Noordegraaf's protective parylene coating in Kao's invention "*in order to provide electrical insulation for the micromechanical systems.*" Applicants traverse. Nowhere does Kao or Noordegraaf teach the need to provide an electrically insulating coating on a released MEMS device.

Instead, Kao teaches that a protective coating is useful for keeping sawing debris from contaminating MEMS devices during wafer singulation (sawing, water jet cutting, etc.). The second reference, Noordegraaf, does not even discuss MEMS devices at all.

More importantly, Kao teaches away from using a water-insoluble coating, like Noordegraaf's parylene coating.

"A significant problem with the use of photoresist or any other substantially water insoluble material as the protective layer is the requirement of a post saw clean operation using environmentally unfriendly solvents (i.e., acetone) to remove the protective layer from the surface of the wafer and associated microelectromechanical systems."

See Kao, Col. 1, lines 60-65.

This "teaching away" by Kao provides significant evidence of non-obviousness of the present invention.

Issue #2 – The Proposed Combination Renders the Prior Art Unsatisfactory

The Office proposes to use Noordegraaf's parylene coating as Kao's protective first layer. However, Kao's invention comprises a water-soluble first layer directly contacting the MEMS device. Kao choose a water-soluble first layer because this advantageously allows the protective coating to be removed/detached using environmentally-friendly water. This is a critical feature of Kao's first protective layer

*Application No. 09/955,722
SD-6436.1 S-97675*

(i.e., water-solubility), which enables this important function (i.e., use of environmentally-friendly solvents (e.g., water).

Since Noordegraaf's parylene coating is water-insoluble, if it was used as Kao's first protective layer, then it **would not function in the same way as required by Kao's teachings**; i.e., it could not be dissolved by an environmentally-friendly solvent (e.g., water). Thus, the **combination of Noordegraaf with Kao et al. would render Kao's invention unsatisfactory for its intended purpose**. Hence, there is no suggestion or motivation to make the proposed combination.

Since the Office has failed to adequately support its assertion that claims 45-60 are obvious in view of the cited prior art, then the rejections under 35 USC 103(a) are improper and should be withdrawn. Accordingly, claims 45-60 are in condition for allowance.

Application No. 09/955,722
SD-6436.1 S-97675

CONCLUSION

Applicants have responded to each and every objection and rejection, and urge that previously presented claims 45-60 as presented are now in condition for allowance. Applicants request expeditious processing to issuance.

Respectfully submitted,



Robert D. Watson
Agent for Applicants
Reg. No. 45,604
Ph: (505) 845-3139
Fax: (505) 844-1418
e-mail: rdwatso@sandia.gov
Sandia National Laboratories
P.O. Box 5800 MS-0161
Albuquerque, NM 87185-0161

Certificate of Transmission under 37 CFR 1.10

I hereby certify that this correspondence was transmitted via facsimile to the U.S. Patent and Trademark Office at phone no. 703 - 872 - 9319 on

8-12-04 (date).



Robert D. Watson